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CATALOGUE OF THE PUBLICATIONS ISSUED BY DEFENCE INVESTIGATION DEPARTMENT/ RESEARCH DEPARTMENT EXETER BETWEEN 1936 AND 1942

Compiled by

S.A. Thornton

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SUMMARY

This catalogue lists the publications issued in the DI/Exe series relating to research and development of balloon barrages and other related ground based air/defence schemes.

An author index is included.

1 INTRODUCTION

Defence Investigation Department was formed in 1936 from a section of Aerodynamics Department with Dr H. Roxbee Cox as its Head. It was responsible for research and development of balloon barrages, and later covered numerous ground defence schemes involving cables, rockets and aerial mines. In September 1939 the Department was moved to University College Exeter known as Research Department Exeter. From then it continued research on barrages until 1942 when it was disbanded and the staff transferred to other RAE Departments.

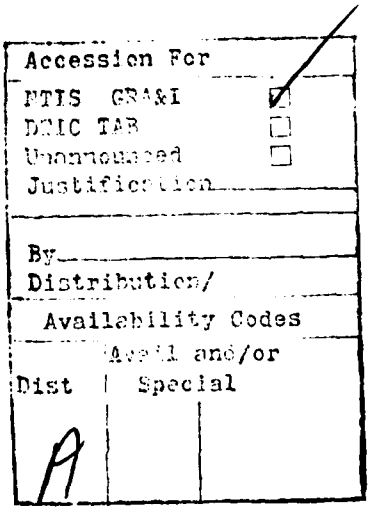
The report series numbering is as follows:

Reports 1-34 issued as: : DI Note I-XXXIV
Reports 35-104 issued as : Report DI/34-104
Reports 105-136 issued as: Report Exe 105-136.

A Departmental Note series was issued between 1939 and 1942

There are considerable gaps in the RAEs holding of both of these series and it is unclear whether the missing items were actually issued or not.

An author index is included.



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REPORTS DI/EXE

DI Note	Author(s)	Title	Date
I		Note on an aerostatically controlled wire barrage	nd
II		Stability of wire towed below aeroplane	nd
III		Impact of rigid aeroplane of high inertia with a flexible suspended cable	nd
IV		Note on the theory of model experiments on the impact of aeroplanes with suspended cables	nd
V		Note on full-scale experiments on the collision of aeroplanes with long cables	nd
VI		Note on full-scale experiments on the collision of aeroplanes with short weighted wires	nd
VII		Experiments at the Royal Aircraft Establishment on the collision of aeroplanes with short weighted wires	nd
VIII		Calculations on the behaviour of short weighted wires in collision with aeroplanes	nd
IX		Minimum size for parachute of parachute bolas	nd
X		Experiments on the effect of a bolas wire rubbing the leading edge of the aeroplane wing colliding with it	nd
XI		Preliminary note on the economics of the short wire parachute barrage	1935.10
XII		Parachute diameters for bolases	1935.10
XIII		Effects of impact of aeroplane with parachute bolas	1935.10
XIV		Long wire barrage-model experiments	nd
XV		The size of parachute bolas	1935.10
XVI		Balloon bolases	1935.12

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DI Note	Author(s)	Title	Date
XVII		Interim note on parachute bolas experiments in seaplane tank	1936.01
XVIII		Note on the critical impact velocity of wires on cables	1936.03
XIX		Impact of a rigid aeroplane of high inertia with a flexible suspended cable (Extension of Note II)	1936.03
XX		Model tests on parachute bolases using the seaplane tank carriage	1936.03
XXI		Theory of the motion of an aeroplane after impact with a cable	1936.05
XXII		Interim notes on parachute bolas experiments with the Hawk	1936.05
XXIII		Review of investigations on the collision of aeroplanes with long wires	1936.05
XXIV		More accurate long wire impact formulae to replace those of Note XIX and improving agreement between theory and experiment in Notes XIV and XXI	1936.06
XXV		Organization of the Portland experiment	1936.05
XXVI		Programme of the Portland experiments	1936.05
XXVII		Visit to France in connection with 'Ariel' high altitude barrage balloon, 25-28 May, 1936	1936.06
XXVIII		Forces generated by oblique impact of a rigid aeroplane with a suspended cable	1936.07
XXIX		Structural strength of aircraft under loads due to impact with suspended cables	1936.06
XXIX A		Simple static tests in connection with local damage due to collision of wing with cable	1936.07
XXX		The strength of punctured wing coverings	1936.09
XXXI		Interim note on French kite balloon materials	1936.06

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DI Note	Author(s)	Title	Date
XXXII		Wind-tunnel tests on the effect of a damaged wing on performance and control	1936.07
XXXIII		Permeability of French kite balloon fabric	nd

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35	Stevens, G.W.H. Hollingdale, H.H.	Note on the packing and ejection of aerial mines from rockets	1936.08
36	Cassie, A.B.D.	First report on the experiments at Portland for the investigation of collision between aeroplanes and cables	1936.10
36A	Cassie, A.B.D.	Report on the experiments at Portland for the investigation of collision between aeroplanes and cables	1936.10
37	Graham, A. Hollingdale, S.H.	Large scale and model experiments on a form of aerial mine	1936.11
38	Hollingdale, S.H.	Note on the collision of an aeroplane with a balloon cable at Mortemets, France, on 10 June, 1936	1936.10
39	Roxbee Cox, H.	A review of the wire barrage position	1936.10
40	Stevens, G.W.H.	A survey of the present information on the blast pressure and fragmentation from a detonated bomb	1936.11
41	Roxbee Cox, H.	Descriptive note on the short wire, or aerial mine, barrage	1936.11
42		No copies held	
43	Lockspeiser, B. Graham, A.	The provision of a lethal balloon barrage	1936.12
44	Hollingdale, S.H.	The influence of the cable on the characteristics and behaviour of the aerial mine	1937.03
44A	Hollingdale, S.H.	Abstract of Report No.DI/44	1937.03
45		No copies held	

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46 (E&I 1022)	Green, H.N. Russell, J.L.	Silhouette detection trials at Farnborough	1936.12
47	Cassie, A.B.D.	Second report on the experiments at Portland for the investigation of collision between aeroplanes and cables - notes on wave motion in cable and force of impact	1937.02
48	Hollingdale, S.H.	Supplementary note to Note XXXII - effect of a damaged wing on performance and control	1937.02
49	Cassie, A.B.D. Coles, N.	Third report on the experiments at Portland for the investigation of collision between aeroplanes and cables - quantitative analysis of cinema films and applications of the results to full scale collisions	1937.04
49A	Cassie, A.B.D. Coles, N.	Abstract of Report No.DI/49	1937.06
50	Cassie, A.B.D. Coles, N.	Fourth report on the experiments at Portland for the investigation of collision between aeroplanes and cables - forces developed on the fin unit	1937.03
50A	Cassie, A.B.D. Coles, N.	Abstract of Report No.DI/50	1937.03
51	Hollingdale, S.H.	The relative merits of various barrage materials	1937.02
51A	Hollingdale, S.H.	Abstract of Report No.DI/51	1937.03
52	Roxbee Cox, H.	Note on the protection of bombers against balloon barrage	1937.03
53	Hollingdale, S.H.	Note on the effect of balloon size on maximum altitude	1937.03
54	Smith, W.	First report on the design of inertia links and contactors for kite balloon barrages	1937.04
55	Coles, N. Smith, W.	Theory of inertia links and bombs operated by tension waves in cables	1937.04

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56	Price, J.S. Stevens, G.W.H.	Tests on the penetration of wing coverings by scatter bombs	1937.06
56A	Stevens, G.W.H.	Abstract of Report No.DI/56	1937.03
57	Stevens, G.W.H.	Experiments on waves in wires with fixed ends	1937.06
57A	Stevens, G.W.H.	Abstract of Report No.DI/57	1937.04
58	Gardiner, E.A.N.	Note on the effect on performance of fitting cutters to the leading edge of an aeroplane wing	1937.04
59	Hollingdale, S.H.	Note on some aspects of the high altitude balloon barrage problem	1937.04
60	Hollingdale, S.H. Wild, N.E.	Collision of an aeroplane with a balloon barrage cable fitted with parachutes at the end	1937.06
60A	Hollingdale, S.H. Wild, N.E.	Abstract of Report No.DI/60	1937.07
61	Graham, A.	Experiments on armed long wire barrages using the 'Hawk' aeroplane	1937.06
62	Gardiner, E.A.N.	Note on the optimum design of a lobular kite balloon	
62A	Gardiner, E.A.N.	Abstract of Report No.DI/62	1937.08
63	Hollingdale, S.H.	Second report on the collision of an aeroplane with a balloon barrage cable fitted with parachutes at both ends	1937.10
63A	Hollingdale, S.H.	Note on the 'parachute cable' type of barrage. Abstract of Report No.DI/63	1937.07
63B	Hollingdale, S.H.	Note on the second report on the collision of an aeroplane with a balloon barrage cable fitted with parachutes at the end. Abstract of Report No.DI/63	1937.10
64	Roxbee Cox, H.	Note on proposed experiments with the Fairey P4/34 and the Vickers 'Wellesley'	1937.07
65	Lockspeiser, B. Stevens, G.W.H. Graham, A.	Note on the probabilities of collision with lethal balloon barrages	

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65A	Lockspeiser, B. Stevens, G.W.H. Graham, A.	Abstract of Report No.DI/65	1937.08
65A	-	Note on the probabilities of collision with lethal balloon barrages. (Amended version for French Gov't)	1937.08
66	Stevens, G.W.H. Price, J.S.	Experimental observations on linen, hemp and natural silk under high impact velocities	1937.10
67	Hollingdale, S.H. Wild, N.E.	The effect of wind on the configuration of the flying cable of a kite balloon	1937.09
68	Gardiner, E.A.N.	Note on the use of radial and polygonal arrangements of rubber for a lobular balloon	1937.10
69	Lockspeiser, B.	Note on the position on the 25 September 1937 of the Portland tests on attenuation	1937.09
69A	Lockspeiser, B.	Concluding note on the 5th series of Portland tests on attenuation (October 6th)	1937.10
70	Hollingdale, S.H.	Strength and drag tests of parachutes for barrage purposes	1937.10
70A	Hollingdale, S.H.	Abstract of Report No.DI/70	1937.11
71	Cassie, A.B.D.	Portland experiments, 1937	1938.01
71A	Cassie, A.B.D.	Abstract of Report No.DI/71	1938.02
72	Smith, W. Osborne, J.C. Coles, N.	Second report on the design of inertia links for kite balloon barrages. The development of an explosive series type and an explosive cutter type inertia link	1937.11
73	Stevens, G.W.H. Price, J.S.	The attack on aircraft from above with fragmenting bombs	1938.02
74	Staff	Note on the problem of comparing the relative efficacy of time and percussion fuzes for anti-aircraft shells	1937.11

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74 Appendix	Jones, M.S.	Criticism of the validity of the concept of a 'lethal' zone of a bursting shell	nd
75	-	Note for S.S.R. for meeting of fuze committee, November 9th. (Note on Report No.DI/74)	1937.11
76	Coles, N.	Report on the position of the lower inertia link on balloon cables	1938.01
77	Staff	Note on the chance of bringing down an aircraft by fragmentation of an A.A. shell	1937.11
78		No copies held	
79	Gardiner, E.A.N.	Cable cutting experiments with armoured leading edge fitted with cutters.	1937.12
80	Gardiner, E.A.N.	Note on effect of initial tension on impact tension and particle velocity created by the collison of an aeroplane with a barrage cable	1937.12
81	Stevens, G.W.H. Hollingdale, S.H. Price, J.S.	The chances of hitting an aerial target (Siskin III and Blenheim bomber) by anti-aircraft fire	1938.01
81A		(Report DI/81 as amended by the Air Ministry)	
82	Hollingdale, S.H. Wild, N.E.	Recent progress in balloon investigation for the high altitude barrage	1938.02
83	Lockspeiser, B. Hollingdale, S.H.	Note on M. Tinssonier's invention of a long wire parachute bolas	1938.01
84	Hollingdale, S.H.	The relative merits of large and small fragmentation shells	1938.01
85	Wild, N.E.	Comparison of the performance of an L.Z. balloon fitted with the standard fixed rig and a running rig, and the effect of an improvement in the quality of the flying cables	1938.04
86		No copies held	
87	Stevens, G.W.H. Gardiner, E.A.N.	Note on the strain wave velocity in cables	1938.05

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88	Gardiner, E.A.N.	Impact tensions and forces due to the normal collision of an aeroplane with a barrage cable	1938.05
89		No copies held	
90			
91	Hollingdale, S.H. Wild, N.E.	The use of tandem balloons for the attainment of a high balloon barrage	1938.06
91A	Hollingdale, S.H. Wild, N.E.	Abstract of Report No.DI/91	1938.06
92	Graham, A. Wild, N.E.	A survey of the possibilities of a very low altitude barrage	1938.05
93	Graham, A. Wild, N.E.	Flight experiments on wire barrages - 1. Local damage due to collision with light cables	1938.06
94		No copies held	
95			
96	Lockspeiser, B.	Note on the design of aeroplanes for flying through cable barrages	1938.07
97	Graham, A. Price, J.S.	Flight experiments on wire barrages - 2. Long aerial mines	1938.11
98		Not issued	
98A	Powley, M.	Note on the high altitude barrage problem. Abstract of Report No.DI/98	1938.10
99		No copies held	
100	Graham, A.	Note on aerial mines for defence of bombers from fighter attack	1939.01
101	Hollingdale, S.H. Richards, G.J.	First report on the development of a kite barrage	1939.01
102	Hall, A.A.	Note on the heated wake behind and aeroplane	1939.02
103	Gardiner, E.A.N.	Note on a statistical method of finding the optimum dispersion of bullets in aerial gunnery	1939.06

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104	Stevens, G.W.H.	Note on the problem of group size and gun alignment in aerial combat	1939.06

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105	Stevens, G.W.H.	Investigation of the critical impact velocities of certain steel cables	1942.06
106	Gibbs, R.E. Lean, D.	Low altitude barrage (Apparatus A.D. Type F.). (i) Balloons	1940.03
107	Wilson, J.G.	Note on the performance of P.E. cells	1940.05
108		No copies held	
109	Powley, M. Wild, N.E.	General kite problems. The influence of kite characteristics on the performance of a kite barrage unit	1940.04
110	Staff	Experimental low altitude (1,000 ft.) barrage at Exeter aerodrome	1940.09
111	Richards, G.J. Smith, T.L.	Weathering of kite fabrics	1941.01
112	Johns, T.F.	Forces on an aeroplane due to an oblique impact with a barrage cable	1941.09
113	Graham, A. Morgan, F.G. Ferguson, L.R.	The balloon barrage guard fitted to the Heinkel 111. Report on strength tests of guard in collison with a vertical cable	1941.09
114 (ARC R 5892)	Stevens, G.W.H.	Experimental work on parachutes used in air defence apparatus	1942.01
115 (ARC R 6068)	Stevens, G.W.H. Johns, T.F.	The theory of parachutes with cords over the canopy	1942.07
116 (ARC R 5896)	Stevens, G.W.H.	The design of parachutes for use in air defence apparatus	1942.04
117	Smith, W.	Effect of oblique impacts on the operations of inertia links	1941.11

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118	Ambler, G.	Report on the investigation by ground experiments of the effects of impact of airscrews with steel cables. Part I	1942.01
119	Johns, T.F.	Forces on an aeroplane due to an oblique impact with a barrage cable. (Addendum to Report No.DI/112.)	1942.01
120	Graham, A. Johns, T.F.	The balloon barrage guard fitted to the Heinkel 111. Optimum size of heavy barrage cable for normal impacts	1942.01
121	Richards, G.J. Smith, T.L.	Report of kite duration flight	1942.03
122	Ambler, G.	Report on the investigation by ground experiments of the effect of impact of aircrews with steel cables. Part II	1942.03
123 (ARC R 5893)	Duncan, W.J. Stevens, G.W.H. Richards, G.J.	Theory of elastic parasheet	1942.03
124 (ARC R 5894)	Richards, G.J.	Tests in the R.A.E. large wind tunnel on controlled opening parachutes	1942.05
125 (ARC R 5895)	Richards, G.J.	Tests in the R.A.E. large wind tunnel on the squidding of parasheets	1942.06
126	Graham, A.	The response of inertia links to adventitious tension waves	1942.05
127		No copies held	
128	Nutsford, A.	Comparative tests on parachute cordages, towing attachments and rigging	1942.06
129	Richards, G.J.	The theory of a parachute with a central shroud line and zero circumferential torsion	1942.07
130	Ferguson, L.R. Johnson, D.	Report on knife edge cutters (Kutonase) fitted to German aircraft	1942.06
131	Richards, G.J. Smith, T.L.	Second report on the development of a kite barrage	1942.08

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132	Forrest, R.H.	Analysis of breakaways of balloons fitted with link DP/R Mark II	1942.08
133	Graham, A.	First report on the development of cut-resistant wires and cables	1942.08
134	Graham, A. Forrest, R.H. Morgan, F.G.	Second report on the development of cut-resistant wires and cables	1942.09
135	Graham, A. Forrest, R.H. Morgan, F.G. Wall, P.E.	Third report on the development of cut-resistant wires and cables. General description of the fractures produced when a wire is cut by a knife-edge	1942.11
136	Graham, A.	Extension of a theory of impact with a wire.	1943.01

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DEPARTMENTAL NOTES EXE

Deptl Notes	Author(s)	Title	Date
1		No copies held	
2	-	Experimental winding gear (winch) for operating kites. Report on preliminary experiments near Mullion, Cornwall on 22/23 September 1939	1939.09
3		No copies held	
4	-	Brief notes on present air defence schemes	
5		No copies held	
6			
7	-	Comparison of the lethal effects of an H.E. shell and a shell containing an aerial mine	[1939.11]
8	-	Summary of work leading to the decision of the long aerial mine described in specification OP/779	
9		No copies held	
10			
11			
12			
13	-	Preliminary note on the use of aerial mines for bomber defence	[1940.02]
14	Powley, M. Wild, N.E.	Note on balloon ripping devices	1940.02
15		No copies held	
16			
17	-	Notes on air defence schemes under consideration at Exeter - March 1941	1941.03
18	-	Notes on the mobile high altitude barrage	

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19	-	The design of aerial mines for specific uses	
20	-	Note on the radio ground proximity pistol at present under development	1941.07
21	-	Note on the critical velocities of plastic and other materials	1941.07
22	-	Barrage guard fittings on the Ju.88 aircraft	1941.09
23	-	The relaxation of strain in a strip of rubber	1941.10
24	-	Apparatus A.D. Type H. Swaged end fittings	1941.11
25	-	The symmetrical bow-string catapult	1942.02
26		No copies held	
27	-	Note on tests of 1" x $\frac{3}{4}$" (nominal) rubber strip supplied by Avon Rubber Co. Limited	1942.03
28	-	Notes on Air Defence schemes developed and under consideration	1942.03
29 (ARC R 5891)	Duncan, W.J.	Note on the squidding of parachutes	1942.05
30	Clarkson, G.T.	Note on position of work on variable drag parachutes	1942.06
31		No copies held	
32	Wall, P.E. Forrest, R.H.	Note on examination of service D.P.L. units	1942.06
33 (ARC R 5902)	Staff	Comments on A.D. Young's paper 'Notes on the aerodynamic characteristics of parachutes	1942.06

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NB EXE Departmental Note numbers indicated by prefix 'N'

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17. Abstract

This catalogue lists the publications issued in the DI/Exe series relating to research and development of balloon barrages and other related ground based air defence schemes.

An author index is included.